

CRITICAL MATERIALS INSTITUTE PROJECTS			
FA 1: Diversifying Supply (B. Moyer, ORNL and R.S. Herbst, INL)			
Thrust 1: New Sources of Critical Materials (C. Anderson, CSM)			
1.1.1	Anderson, Corby	CSM	Advanced Beneficiation Techniques
1.1.2	DePaoli, David	ORNL	Recovery of REEs and Uranium from Phosphate Ore Processing
1.1.3	Harrison, Stephen	Simbol	Improved Methods for Lithium Extraction
Thrust 2: Transformational Processing (R.S. Herbst, INL)			
1.2.1	Herbst, Scott	INL	Enhanced Separation of Adjacent Rare Earth Elements
1.2.2	Mishra, Brajendra	CSM	Conversion to Metal, Alloys, and Materials
1.2.3	Dai, Sheng	ORNL	Ionic-Liquid Separation Processes
1.2.4	Windus, Theresa	Ames	Computational Prescreening of Ligands
Thrust 3: New Uses for Co-Products (tbd)			
1.3.2	Rios, Orlando	ORNL	Development of High Cerium Content Aluminum Alloys
FA 2: Developing Substitutes (T. Lograsso, Ames and B. Sales, ORNL)			
Thrust 1: Strong Permanent Magnets with Reduced Rare Earth Content (R.W. McCallum, Ames; S. McCall, LLNL)			
2.1.1	Canfield, Paul	Ames	Reduced Rare Earth Content High Performance Magnets
2.1.2	McCall, Scott	LLNL	Additive Manufacturing of Permanent Magnets
2.1.3	Johnson, Frank	GE	Optimization of Grain Boundaries and Interfaces in Fine Particle Magnets
2.1.4	McGuire, Michael	ORNL	Thermo-Magnetic Processing of Rare Earth Magnets
2.1.5	Gschneidner, Karl	Ames	Direct Conversion of SM203 to SmCox Permanent Magnets
2.1.6	Turchi, Patrice	LLNL	Materials Design Simulator
Thrust 2: New Efficient Phosphors Without Critical Material Content for Lighting (S. Payne, LLNL)			
2.2.4	Payne, Steve	LLNL	New Efficient Phosphors Without Critical Material Content for Lighting

CRITICAL MATERIALS INSTITUTE PROJECTS			
FA 3: Improving Reuse and Recycling (E. Peterson, INL and E. Jones, LLNL)			
Thrust 1: Source Preparation (Separation and Concentration) (B. Mishra, CSM)			
3.1.1	Mishra, Brajendra	CSM	Recovery and Reuse of Rare Earth Metals from Phosphor Dusts
3.1.4	Taylor, Patrick	Mines	Beneficiation of Photovoltaic (and other) Functional Coatings
3.1.5	McIntyre, Tim	ORNL	Transforming Reuse and Recycling of Rare Earth Magnets
3.1.6	Hung, Steve	GE	Thermal Barrier Coat Revert and Future Opportunities
Thrust 2: Transformative Extraction and Materials Production (R. Fox, INL)			
3.2.1	Fox, Bob	INL	Supercritical Fluid Beneficiation of Waste Streams
3.2.2	Bhave, Ramesh	ORNL	Membrane Solvent Extraction for Rare Earth Separations
3.2.5	Reed, David	INL	Bioleaching for Recovery of Recycled REE
3.2.6	Lister, Tedd	INL	Recovery of Critical Materials from Consumer Devices
FA 4: Crosscutting Research (E. Schwegler, LLNL and J. Barnes, INL)			
Thrust 1: Enabling Science (E. Schwegler, LLNL)			
4.1.1	Antropov, Vladimir	Ames	Ab initio Theory of Temperature Dependent and Multi-Scale Phenomena in Magnets
4.1.2	tbd	tbd	Predicting, Controlling and Tailoring Crystal Electric Field Splitting for Magnetic Anisotropy in REE Systems and <i>d</i> -Impurities in Phosphors
4.1.3	Riman, Richard	Rutgers	Fundamental Properties and Phase Diagrams
4.1.4	Ott, Ryan	Ames	Rapid Assessment Methodologies
Thrust 2: Environmental Sustainability (Y.Fujita, INL)			
4.2.1	Klaehn, John	INL	Treatment of Mineral Processing Waste Streams and Recovery of Clean Water Using Sorption, Passive, and Active Microfiltration Systems
4.2.2	Fujita, Yoshiko	INL	Rare Earth Effects on Biological Wastewater Treatment Systems
Thrust 3: Supply Chain and Economic Analysis (R. Eggert, CSM)			
4.3.1	Eggert, Rod	CSM	Criticality and Sustainability Assessment
4.3.2	Cafferty, Kara	INL	Economic Analysis of CMI Research and Global Material Supply Chains
4.3.3	Collins, John	INL	National Technology Roadmap for Critical Materials